

# Improving theoretical predictions for LHC processes by means of resummation

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The precision of experimental measurements continuously increases, which requires the theoretical predictions to improve as well. The problem of including higher order loop calculations in QCD is that large terms appear at all orders in perturbation theory, even though the coupling constant is small. They become for example large in the kinematic limit where the final state particles are produced at threshold, leaving little energy for the radiated gluons. As a consequence, the perturbative description is invalidated. By means of resummation one can find all order expressions for cross sections, restoring the predictive power of the theory. I will demonstrate in a simple example how this can be done. I will then show new results where we find resummed cross sections for QCD-induced diphoton production and the Drell-Yan process. We consider cross sections that are differential in both the invariant mass and the rapidity of (one of the) final state particles.

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